Salmonellosis

Bioterrorism Agent Profiles for Health Care Workers

Causative Agent:

Several distinct bacteria within the genus *Salmonella* cause diarrheal illness, sometimes with septicemia. *Salmonella enteritidis* has more than 2000 different serotypes and is responsible for many of the foodborne gastrointestinal illnesses commonly found in man and animals. *Salmonella typhi* causes typhoid fever.

Routes of Exposure:

Oral through consumption of contaminated food or water

Infective Dose & Infectivity:

The infective dose is unknown but the LD_{50} has been reported to be 10 million organisms. The infectivity of salmonella is moderate. A carrier state occurs and is more common among female and elderly patients. It may persist for months to years.

Incubation Period:

The incubation can be from 6 to 72 hours, but it usually ranges from 12 to 36 hours.

Clinical Effects:

Salmonella gastroenteritis typically manifests as nausea, vomiting, abdominal cramps, and diarrhea, which is sometimes bloody. Weakness, chills, and fever may also be present, although there is a wide variability in the severity of symptoms seen. The typhoidal syndrome includes a high spiking fever, abdominal cramps, diarrhea, abdominal distention, septicemia, enlarged spleen, and occasional meningeal signs.

Laboratory testing:

The stool, blood, and ingested food should be cultured. The best clinical predictor of a positive stool culture for Salmonella is the combination of diarrhea persisting for more than 24 hours, fever, and either blood in the stool or abdominal pain with nausea or vomiting.

Lethality:

The mortality rate of salmonellosis is low to moderate (<1% for most serotypes).

Transmissibility:

The fecal-oral route is the most common mode of person-to-person transmission. There is no known transmission by the inhalational or dermal routes.

Primary contaminations & Methods of Dissemination:

In a terrorist attack, salmonellosis would most likely occur due to intentional contamination of food or water supplies.

Secondary Contamination & Persistence of organism:

Secondary transmission can result from exposure to the stool of patients with overt disease and from chronic carriers. Diarrheal fluids are highly infective. Greater than 50% of patients stop excreting nontyphi salmonella within five weeks after infection and 90% are culture negative within nine weeks.

Decontamination & Isolation:

Patients- No decontamination necessary. Patients can be treated with standard precautions, with contact precautions for diapered or incontinent children less than six years of age. Hand washing is of particular importance

Equipment, clothing & other objects- Hypochlorite, other disinfectants and/or soap and water are effective for environmental decontamination.

Treatment:

For uncomplicated cases, rehydration may be all that is required. Oral or intravenous routes can be used depending on the individual patient's circumstances. Antibiotics are not ordinarily used since they prolong fecal shedding but they should be considered in infants, the elderly, and those with underlying illnesses. All bacteremic patients should receive antibiotics. For those who require antibiotic treatment, ciprofloxacin, 500 mg every 12 hours is the recommended treatment.

Prophylaxis:

A typhoid vaccine exists, but it is only recommended for cases in which persons have intimate exposure (e.g., household members with continued contact) with documented typhoid fever carriers. No prophylaxis is recommended for the other types of Salmonella infections.

Differential Diagnosis:

Several other forms of bacterial food poisoning, including *Staphylococcus, Clostridium, Streptococcus*, and *Shigella* may show similar signs and symptoms.

References:

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